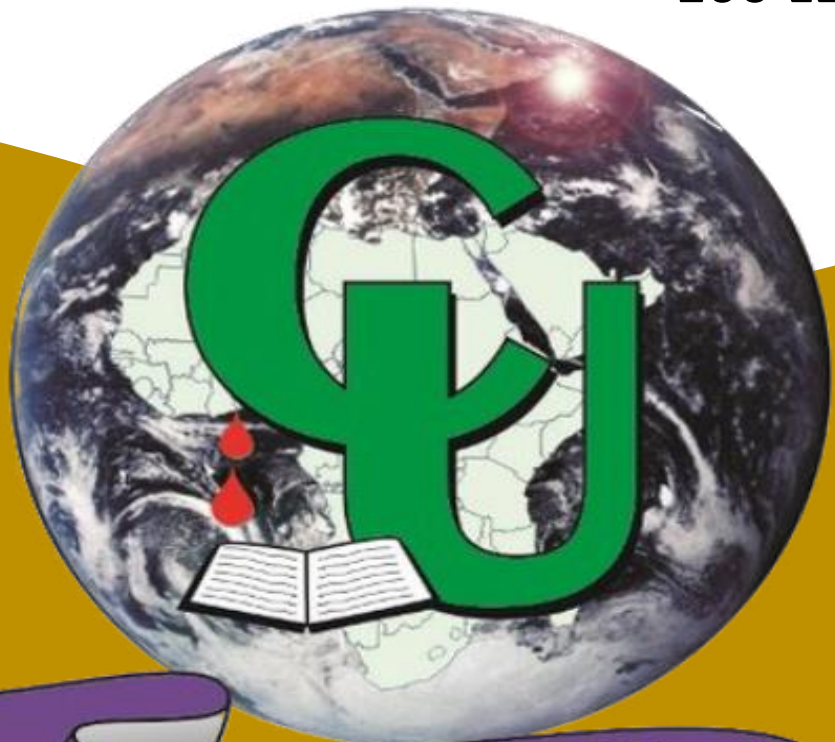


COVENANT UNIVERSITY

ALPHA SEMESTER TUTORIAL KIT
(VOL. 2)

PROGRAMME: APPLIED BIOLOGY
100 LEVEL



Raising A New Generation Of Leaders

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LIST OF COURSES

BLY111: Animal Diversity: Forms and Functions

BLY112: Cell Biology

*Not included

COVENANT UNIVERSITY

TUTORIAL QUESTIONS

COLLEGE:	Science and Technology
DEPARTMENT:	Biological Sciences
Programme:	Applied Biology and Biotechnology
Course Code:	BLY 111
Course Title:	Animal Diversity: Forms and Functions
Units:	3

1. Highlight the basic features that can be used to classify animals.
2. List the four classes of the phylum Cnidarian and give at least one example of each class.
3. Describe the life cycle of Obelia
4. What are the distinguishing characteristics of the phylum Platyhelminthes.
5. Describe the life cycle of *Ascaris lumbricoides*
6. For centuries, sponges are classified as plants. Justify their current classification as animals.
7. What special adaptations do tapeworms have for their parasitic way of life?
8. Describe locomotion in Hydra.
9. Planarians have a high rate of regeneration. Describe how reproduction takes place in planarians.
10. Based on your knowledge of binomial nomenclature, attempt to classify a named specie of root-knot nematode associated with vegetables on the Covenant University Farm.

11. What is the significance of coelom in animals?
12. What do you understand by metamerism?
13. What is the difference between poriferans and porifere?
14. Highlight two differences between Frog and Toad
15. List the three key features possessed by the reptiles. What is the significance of each?
16. List the features that characterize the phylum annelida
17. How many classes are present in the phylum Mollusca? Name them
18. Give reasons for why it may be correct to say arthropods are the most successful animals on earth
19. What latin terms is Echinodermata derived from?

20. The **only** flying mammal belongs to what order?

Answers

1. A. Body Symmetry- Arrangement of body structure in relation to the axis of the body
- Radial Symmetry- Multiple planes can be drawn through the central axis each dividing the organism into two mirror images
 - Bilateral Symmetry- Animals can be divided through only one plane which passes through the line of the body to produce equivalent right and left halves that are mirror images e.g snail, man

B. Type of Germ layer:

- Ectoderm-gives rise to the outer covering of the body and to the nervous systems.
- Endoderm- Gives rise to the lining of the digestive tube and other digestive organs.
- Mesoderm- Gives rise to most of the body structures including muscles skeletal structure and circulatory systems

*Diploblastic animals have ectoderm and endoderm while triploblastic animals also have an intervening mesoderm layer; these include all bilaterians

C. Body Cavity :Triploblastic animals can be grouped based on the type their body cavity i.e

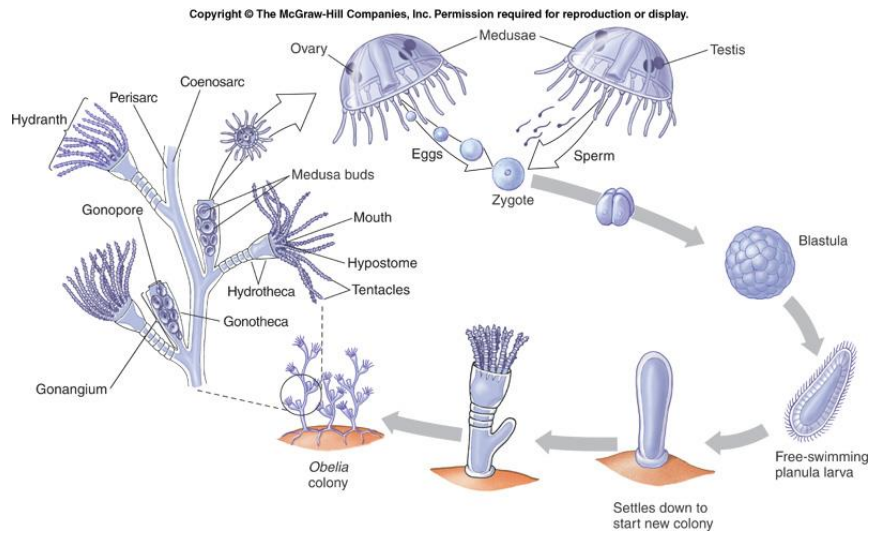
- Acoelomates – No body cavity, only solid body e.g planarians
- Pseudocoelomates- Those with body cavity not completely lined with mesoderm e.g nematodes
- Coelomates- Posses true body cavity. A true body cavity is called a coelom and is derived from mesoderm.

D. Embryonic development. Animals with body cavity can be grouped into Protostomes and Deuterostomes based on the differences in their developments.

2. There are four classes which includes:

- Class Hydrozoa (Portuguese Man o' War, Obelia, etc.) Hydra, Physalia.
- Class Scyphozoa (jellyfish) Aurelia
- Class Anthozoa (sea anemones, corals, etc.).
- Class Cubozoa (Boxjelly fishes).

3.

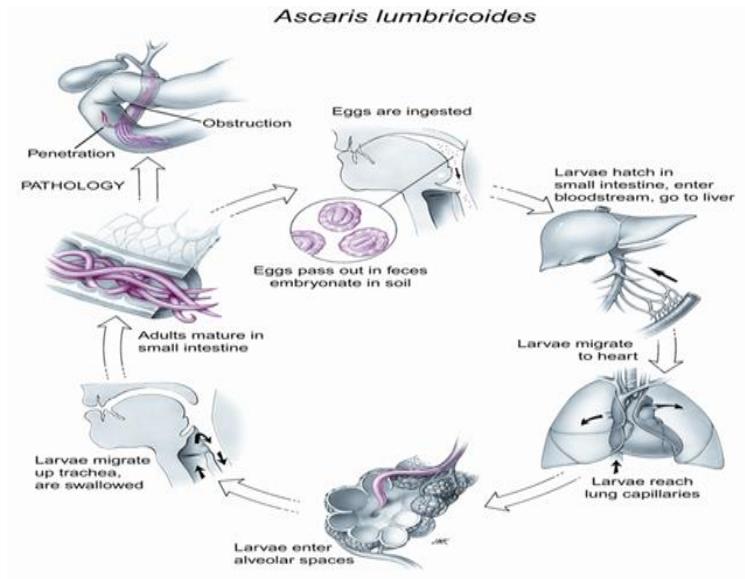


Life cycle of obelia

4. Characteristics of the Phylum Platyhelminthes

- They are soft bodied, unsegmented, dorsoventrally flattened worms having a bilateral symmetry,
- Flatworms are acoelomate and triploblastic with organ level of organization.
- Digestive system is incomplete with a single opening- the mouth, anus is absent.
- Circulatory, respiratory and skeletal system are absent.
- Excretion and osmoregulation is brought about by protonephridia or flame cells.
- Ammonia is the chief excretory waste product.
- Nervous system is of the primitive type having a pair of cerebral ganglia and longitudinal nerves connected by transverse commissures.
- Sense organs are poorly developed, present only in the free living forms.
- They are basically hermaphrodites with a complex reproductive system.
- Development is either direct or indirect with one or more larval stages.

5.



Life cycle of *Ascaris lumbricoides*

BLY 111 TUTORIAL QUESTIONS

ANSWERS

12. Metamerism is the division of the body of an animal into linear series of similar rings or segments, each of which is built on more or less the same plan and resembling each other.

14. Frogs have smooth, moist skin and long legs and most live in or near water while toads have bumpy, dry skin and short legs and most live in dry environments

15. **Amniotic eggs**, which are watertight preventing desiccation

Dry skin, which covers body and prevents water loss

Thoracic breathing, which increases lung capacity

19. Echinus – Hedgehog; Derma – Skin

20. Chiroptera

COVENANT UNIVERSITY

Department of Biological Sciences

Alpha Semester Examination

Programme: Applied Biology and Biotechnology.

Course Code: BLY112

Course Title: Cell Biology

Unit: 2

Tutorial Questions.

1. Photosynthetic autotrophs use ----- from the air as a carbon source and ----- as their energy source.
2. Summarize the photosynthetic reaction as an equation. Why is photosynthesis important to all living things?
3. Name the two stages of photosynthesis
4. Where do the stages of photosynthesis occur in the chloroplast respectively?
5. How many photosystems are there for photosynthesis? List them and their functions
6. When does the Calvin cycle start and what is the end product of the cycle?
7. What is the sink resource of the Calvin cycle and what is its first stable compound?
8. What compound accumulates in the thylakoid of the chloroplast during the light dependent reaction?
9. The breakdown of glucose to form two molecules of pyruvate is _____.
10. Fermentation occurs only in _____ and the end products are _____ or _____
11. In aerobic organisms growing in the presence of oxygen, the NADH produced by glycolysis ultimately donates its high-energy electrons to electron transport chains in the mitochondria True/False
12. Cellular respiration is the process of production of ATP via the electron transport system. True/fasle _____.
13. The oxygen that is breathed in during respiration used in cellular respiration as what?
14. What is the Gross and Net ATPs produced in Glycolysis?
15. What is the net ATP produced from Animal, Plant and Microbes respectively after complete breakdown of one molecule of glucose?
16. Name two energy carrier co-enzymes
17. Name the two types of phosphorylation

18. The overall equation for glucose metabolism is $C_6H_{12}O_6 + 6O_2 \rightarrow \text{_____} + \text{_____} + \text{ATP}$ and heat. The carbon atoms in the CO_2 molecules in this equation come from _____
19. a) State the cell theory
- b) Draw a neat labeled diagram of a bacterium plant and animal cell
20. Comment on the functions of the following organelles:
- Endoplasmic Reticulum
 - Golgi Complex
 - Mitochondrion
 - Chloroplast
 - Nucleus
 - Lysosome
21. Describe the history of the cell theory.
22. Draw and label a plant cell.
23. State the functions of the three main components of the cell.
24. What are macromolecules?
25. Name the major macromolecules and two functions of each.
26. Name the components of the cell membrane.
27. Why is the cell an organic being?
28. Draw and label an animal cell.
29. Name 5 differences between a plant and animal cell.
30. Give 2 differences between a prokaryote and a eukaryote.

>>>>>>

ANSWERS

1. History of the cell theory

- Invention of simple microscope by Antoin Leouwen Hoeke
- Observation of cork by Hooke – cells
- Observation of nucleus – Robert Brown 1820
- Schleidon (1838) theorized all plants are made of cells.
- Schwann (1839) theorized all animals are made of cells

2. Drawing of plant cell. See notes

3. -Cell membrane – controls what goes in and comes out of cells; surrounds the cell

- Nucleus – controls all activities of cell
- Cytoplasm – supports all organelles in the cell
 - gives shape.

4. Big and large molecules made by the cell.

5. -Carbohydrates – for energy (immediate)
- Protein – cell movement; making cells
 - Fat and Oil – Heat,
 - Nucleic Acid – Hereditary

6. Cell membrane –

- (a) phospholipids bi layer, (b) Transport protein
- (c) Receptor protein, (d) Recognition protein
- (e) Adhesion protein, (f) Cholesterol.

7. Molecule contain carbon elements

8. Animal cell –see notes